

What is claimed is:

1. A device for propulsion as an oscillating appendage, said device comprising:

a vessel housing a supply of pressurized fluid;

a plurality of reinforced tubes in fluid communication  
with said vessel;

a valve for selectively controlling the supply of the  
pressurized fluid from said vessel to said  
reinforced tubes and release of the pressurized  
fluid from said reinforced tubes wherein the  
controlled supply and released flow of the  
pressurized fluid oscillates said oscillating  
appendage to propel said oscillating appendage; and

a flexible skin encompassing said vessel, said reinforced  
tubes, and said valve wherein said flexible skin  
defines an outer shape of said oscillating  
appendage.

2. The device in accordance with claim 1 wherein said device  
further comprises a tail member at a terminal end of said  
oscillating appendage, said tail member reactive to the  
oscillating motion for additional propulsion.

3. The device in accordance with claim 2 wherein said valve comprises:

a casing having a plurality of ports formed therein for enabling the supply and release of the pressurized fluid in said reinforced tubes;

a spindle within said casing having passages formed therethrough, said passages aligning with selected ones of said plurality of ports; and

opposing pressure chambers formed at opposite ends of said spindle, said pressure chambers controlling a position of said spindle between said pressure chambers;

wherein a first positioning of said spindle enables the supply of the pressurized fluid to one of said reinforced tubes axially expanding that said reinforced tube to bend said oscillating appendage in a direction toward another of said reinforced tubes during the release of the pressurized fluid from said another of said reinforced tubes thereby oscillating said oscillating appendage, and

wherein a second positioning of said spindle reverses the enablement of the first positioning.

4. The device in accordance with claim 3 wherein said valve further includes an inner biased spring for normally biasing said spindle to the direction of the first positioning.

5. The device in accordance with claim 4 wherein each of said reinforced tubes includes inner elastomeric tubing and a plurality of surrounding axially arranged constraint rings for constraining radial expansion of said inner elastomeric tubing.

6. The device in accordance with claim 5 wherein said reinforced tubes are fluidly connected at intervals to each other.

7. The device in accordance with claim 6 wherein said fluid is compressible gas.

8. The device in accordance with claim 1 wherein said valve comprises:

a casing having a plurality of ports formed therein for enabling the supply and release of the pressurized fluid in said reinforced tubes;

a spindle within said casing having passages formed therethrough, said passages aligning with selected ones of said plurality of ports; and

opposing pressure chambers formed at opposite ends of said spindle, said pressure chambers controlling a position of said spindle between said pressure chambers;

wherein a first positioning of said spindle enables the supply of the pressurized fluid to one of said reinforced tubes axially expanding that said reinforced tube to bend said oscillating appendage in a direction toward another of said reinforced tubes during the release of the pressurized fluid from said another of said reinforced tubes thereby oscillating said oscillating appendage, and

wherein a second positioning of said spindle reverses the enablement of the first positioning.

9. The device in accordance with claim 8 wherein said valve further includes an inner biased spring for normally biasing said spindle to the direction of the first positioning.

10. The device in accordance with claim 9 wherein each of said reinforced tubes includes inner elastomeric tubing and a

plurality of surrounding axially arranged constraint rings for constraining radial expansion of said inner elastomeric tubing.

11. The device in accordance with claim 10 wherein said reinforced tubes are fluidly connected at intervals to each other.

12. The device in accordance with claim 11 wherein said fluid is compressible gas.

13. A device for propulsion as an oscillating appendage, said device comprising:

a supply of pressurized fluid;

a plurality of reinforced tubes in fluid communication  
with said supply of pressurized fluid;

a means for directing said supply of pressurized fluid to  
a separate reinforced tube of said plurality of  
reinforced tubes;

a means for releasing in the same instant pressurized  
fluid from an alternate reinforced tube of said  
plurality of reinforced tubes thereby creating an

oscillating motion by said oscillating appendage to propel said oscillating appendage; and

a flexible skin encompassing said supply of pressurized fluid, said plurality of reinforced tubes, said directing means and said releasing means, said flexible skin responsive to said oscillating motion in propulsion of said device.

14. The device in accordance with claim 13 wherein said device further comprises a tail member at a terminal end of said oscillating appendage, said tail member reactive to the oscillating motion for additional propulsion.